

In the Office Action mailed February 6, 2002 on application no. 09/104,947, claims 1-7, 11-14, and 18-32 are rejected on several grounds. Claims 8-10 and 15-17 have been withdrawn from consideration as directed to a non-elected species but are still pending in the application. Claims 1-4, 6-7, 11, 13, 18, 20, 22-23, 25, 30 and 33-35 are currently pending in the application.

Claims 1, 3-5, 13, 14, 18-24, 26-29, 31 and 32 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 3, 4, 13, 14, 18-20, 26-29, 31 and 32 were rejected under 35 USC 112, second paragraph via 35 USC 112, sixth paragraph as indefinite since it is not readily apparent what structure corresponds to the function or acts set forth in claim 3. Claims 3, 4, 13, 14, 18-20, 26-29, 31 and 32 were also rejected under 35 USC 112, first paragraph as not being enabled by the specification. The same claims were also rejected to under 35 USC 102(b) as being anticipated by Best et al (Statutory Invention Registration H1221). Finally, claims 2, 4, 6, 7, 11, 12, 14, 18-20, 25 and 30 were rejected under 35 USC 103(a) as being obvious over Best.

Summary of Interview with Examiner

Interview record OK
WK
9-19-02

Applicant thanks Examiner for the courtesy of the personal interview with Shawn B. Dempster and Shin Yuan Tan as conducted on June 12, 2002. Applicant also thanks the Examiner for providing the Interview Summary as mailed on June 17, 2002. The substance of the interview centered on the claims of record and the cited prior art. While no agreement was reached, the definition of a "standard sized disc diameter" was clarified to indicate that this is the maximum allowable diameter disc that can fit into a standard disc drive form factor housing without compromising the structural integrity of the disc drive housing. A sincere effort has been made by Applicant to amend the claims in accordance with the suggestions as provided by the Examiner.

Rejection under 35 U.S.C. §112

Several rejections were made under 35 U.S.C. §112. For the sake of clarity, each rejection has been designated by an individual heading.

§112, Second Paragraph

Claims 1, 3-5, 13, 14, 18-24, 26-29, 31 and 32 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It should be noted that claims 5, 14, 18-19, 21, 23-24, 26-29, 31 and 32 have been cancelled, leaving claims 1, 3-4, 13 and 22 still pending. Claim 26 had been rejected due to a lack of antecedent basis but has been cancelled.

The Examiner has stated that the phrases "smaller than a standard diameter" and "standard configuration" are vague and indefinite. Claims 1 and 3 have been amended in order to clarify the scope of the terms. Specifically, the phrase "smaller than a standard diameter" has been changed throughout the remaining claims to "smaller than the maximum allowable diameter." The maximum allowable diameter may be readily calculated by one skilled in the art by looking at the width of the form factor, the thickness of the housing walls, and any clearances needed for the rotation of the disc or stack of discs. This new limitation related to the maximum allowable diameter should be readily ascertainable by one of the ordinary skill in the art of disc drive design. Using the maximum allowable diameter as a baseline, the further limitation of a smaller than maximum allowable diameter disc is also ascertainable. For example, in a disc drive where the maximum allowable diameter of a disc is 95 mm such as in claim 4, the diameter of the smaller than maximum diameter discs must be at least 2% less than 95 mm. In this instance, this is the point where the balance between the factors above is achieved.

The phrase "standard configuration" has also been amended throughout the claims to read "standard form factor." A form factor refers to the basic dimensions of the disc drive housing, such as the length, width and height. One form factor, that of 3 ½ inches, is described in some detail in the specification on page 5 (half-high configuration) and on page 8. In addition, page 10, lines 6-8 of the specification notes that the present invention is applicable to other form factors, such as 2 ½ inch and 5 ¼ inch drives. The references of the Magnetic Storage Handbook, 2d Edition, (Mee and

Daniel, McGraw Hill, 1996), section 2.2.5.1, table 2.5 (hereinafter "Handbook") and in "Flow and Thermal Fields in Channels Between Co-Rotating Disks," IEEE Transactions on Components, Hybrids, and Manufacturing Technology, Vol. 11, No. 4, 587, December 1988, tables I and II provided along with Paper No. 22, filed January 2, 2002, also indicate the existence of standard form factors. Thus, a standard form factor would be readily ascertainable by one skilled in the art because such standard form factors are well known in the art and are well defined throughout the industry.

The Examiner also stated that the terms at issue in claims 1 and 3 are not fixed in any way, and that due to that factor the claims are indefinite by referencing an object that is variable. The case that the Examiner cited, In re Brummer, 12 USPQ2d 1653 (Bd. Pat. App. & Inter. 1989), to support this assertion may be distinguished from the current application. In Brummer, one of the claims at issue discussed the custom manufacture and sizing of a bicycle to fit an individual person. The Board held that the claim was indefinite because whether a bicycle would be covered by the claim would not be determined "on the basis of the structural elements and their interrelationships, . . . , but by the means of a label placed upon the bicycle at the discretion of the manufacturer." Id. at 1655. The amendment of claim 1 and its dependents provides the structural elements and the interrelationships between the parts of the drive. As discussed above, the terms "maximum allowable diameter" and "smaller than maximum allowable diameter" may be ascertained by reference to the respective standard form factor of the disc drive. As also discussed above, a standard form factor is also readily ascertainable. Unlike the bicycles contemplated by Brummer, the form factor of a drive is not at the discretion of the manufacturer, but rather is a quantifiable element. For example, the basic dimensions of a 3 ½ inch drive made by the Applicant would be the same as a 3 ½ inch drive made by a direct competitor. If this weren't the case, neither party would be able to compete commercially. A form factor is fixed, with no variation. The only variation is that there are several different standard form factors upon which the current invention may be applied. However, regardless of the form factor, the public

would still be provided with notification of what is covered by the invention. As stated in the specification on page 10, the invention is applicable to other disc form factors.

In light of the amendment of the claims presented above, Applicant respectfully submits that the terms "standard form factor" and "smaller than the maximum allowable diameter" are definite under 35 USC 112, paragraph 2. Claim 1 is now believed to be in condition for allowance. In addition, dependent claims 3-4, 13, 18, 22 and 33-35 are also believed to be definite as they depend from a definite claim. Reconsideration and withdrawal of the rejection of claims 1, claims 3-4, 13, 18, 22 and 33-35 under 35 USC §112 second paragraph is respectfully requested.

§112, Paragraph 6

Claims 3, 4, 13, 14, 18-20, 26-29, 31 and 32 were rejected under 35 USC 112, paragraph six as via 35 USC 112, second paragraph as being indefinite because it would not be readily apparent to one having ordinary skill in the art what structures correspond to the function or acts set forth in former independent claim 3.

Claim 3 has been amended to overcome this rejection and now is believed to be in allowable form. Claims 3, 4, 13 and 20 have also been amended to be dependent on independent claim 1. Claims 14, 18-19, 26-29, 31 and 32 have been cancelled. As claims 3, 4, 13 and 20 ultimately depend from claim 1, they are also believed to be definite. Applicant respectfully requests reconsideration and withdrawal of the rejection.

§112, Paragraph 1

Claims 1, 3, 5, 13, 21-24, 26-29, 31 and 32 were rejected under 35 USC 112, first paragraph because the specification does not reasonably provide enablement for other diameter discs used in a standard form factor which are "smaller than a standard diameter rigid disc." The Examiner asserts that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

When dealing with an issue of enablement under 35 USC 112, paragraph 1, the overall question becomes whether the experimentation required to practice the

invention is undue or unreasonable. Along that line, the scope of the enablement must only bear a reasonable correlation to the scope of the claims. In order to make a determination of the propriety of a rejection based upon the scope of the claim, two stages of inquiry must be undertaken. First, a determination must be made as to how broad the claim is with respect to the disclosure, looking at the entire claim. Second, a finding must be made as to would one skilled in the art be enabled to make and use the entire scope of the claimed invention without undue experimentation.

First, claim 1 as amended and its dependents, when looked at as a whole, bear a reasonable correlation to the specification. The specification describes the invention in the general terms of its application to a 3 ½ inch drive, with the understanding that the application of the present invention to this form factor is only illustrative of one contemplated embodiment. The specification specifically states that the principles of the present invention are applicable to other standard disc drive forms. (Page 10, Lines 4-8). The claims are in direct correlation with the scope of the specification in that they not only claim the invention in a general sense in amended claim 1 but also claim the invention in the context of a 3 ½ inch standard form factor in the dependent claims. Claim 1 would allow one skilled in the art to practice the invention in connection with any standard form factor, while dependent claims 3 and its further dependents would allow application to a standard 3 ½ inch form factor.

This argument naturally feeds into and is closely related to the next question of the inquiry, which is whether one skilled in the art would be enabled to make and use the entire scope of the invention without undue experimentation. The present invention via claim 1 and its dependents provides a framework for utilizing discs that are smaller than the maximum diameter permitted by the physical confines of the housing in order to obtain the benefits of reduced power consumption and heat. It is well within the abilities of one who is skilled in the art to manipulate the invention in order to get to specific heat and power levels as needed for the desired standard form factor. One skilled in the art, given this blueprint, would not have to go through any

extraordinary experimentation beyond what is usually required to produce a functional drive to achieve the results as claimed.

Claims 11 and 18 were rejected as not reciting the critical structure to enable the larger number of discs to fit within the standard configuration of the disc. Claim 18 has now been cancelled, and claim 11 now depends from claim 25. A structure is critical only when the language of the specification makes it clear that the limitation is critical for the invention to function as intended. Claim 25 makes the general claim that the disc drive of claim 1 has a greater number of smaller than maximum allowable diameter discs in a stack of discs than the same drive with a stack of maximum allowable discs. Dependent claim 11 applies that basic concept to a 3 ½ inch low profile standard form factor where six discs are used as opposed to the number used in the same form factor using maximum allowable diameter discs. One skilled in the art would have the ability to practice the invention embodied in either claim 25 or 11 using the ordinary knowledge of the art. The specification provides one possible solution on page 10, line 9 through page 12, line 20. While the specification is describing the structural changes within the concept of a 3 ½ inch half high drive, one skilled in the art would be able to translate those changes into the 3 ½ inch low profile drive of claim 11, or simply make other structural changes of his own to accommodate a larger number of discs in the disc stack of a standard form factor drive. This is merely one contemplated embodiment. Viewing these structural elements through the lens of the undue experimentation test as discussed above, a person skilled in the art would not have to perform undue experimentation to produce the same results.

Based on the above arguments and amendments of the claims, remaining claims 1, 3, 11, 13, 22 and 25 are believed to be definite. Reconsideration and withdrawal of the rejection under 35 U.S.C. §112, first paragraph of claims 1, 3, 11, 13, 22 and 25 is respectfully requested.

Rejection under 35 U.S.C. §102(b)

Claims 1, 3, 5, 13, 21-24, 26-29, 31 and 32 were rejected under 35 USC 102(b) as being anticipated by Best et al., U.S. Statutory Invention Registration HI1221, ("Best").

In order to show anticipation under 35 USC 102(b) each and every element of the claims of the application must be present in a single prior art reference. This is not the case in this instance.

Claim 1 has been amended to clarify the basic structure of the claimed invention as a disc drive comprising a single housing with one spindle. In addition, discs in the stack of discs have a diameter smaller than a maximum allowable diameter associated with a standard form factor. The disclosure of Best dictates that it must be read in the confines of the parts of the device as described, namely four (or more) 2 ½ inch disc drives (or arrays) connected to function as one larger form factor disc. (See col. 7, lines 60-65 and col. 9, lines 24-31). Nowhere in Best is it stated that the invention is embodied in one housing with one spindle, thus it does not state each and every element of the present application. As such, Best does not anticipate the current invention under 35 USC 102(b) in claim 1.

Claims 3, 13 and 22 depend from claim 1 and are allowable to the extent they depend from an allowable claim. Claims 5, 21, 23-24, 26-29 and 31-32 have been cancelled. Based on the above arguments, Applicant respectfully requests the reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b) and the subsequent allowance of claims 1, 3, 13, 22 and 24.

Rejection under 35 U.S.C. § 103(a)

Claims 2, 4, 6, 7, 11, 12, 14, 18-20, 25 and 30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Best et al.

As stated above, claim 1 presents the claim limitations of a stack of smaller than the maximum allowable diameter disks on a single spindle within a single disc drive enclosure. The Best does not provide for a disc stack on a single spindle in a single enclosure. Rather, the reference provides for multiple spindles, with a preferred embodiment containing four spindles (see col. 9, lines 26-31). Best fails to provide all of the claim limitations of claim 1. Best also does not teach or reasonably suggest modifying Best to have only one spindle.

Claims 1-7, 11-14 and 18-32 are rejected under 35 USC 103(a) based on Applicant's admitted prior art (AAPA) in the specification of the current application in light of Magnetic Storage Handbook, 2d Edition, (Mee and Daniel, McGraw Hill, 1996), section 2.2.5.1, table 2.5 (hereinafter "Handbook"). Claim 1 requires the use of a stack of smaller than maximum allowable diameter discs on a single spindle in a single disc drive housing. The Examiner states in the office action that the AAPA discloses a "standard" diameter disc associated with a "standard" sized configuration. The reference as applied does not teach or suggest all of the claim limitations of either claim 1 or its dependents.

The AAPA of the specification of the application as cited by the Examiner contains nothing more than the state of the art at the time of the filing of the current invention. A 3 ½ inch form factor, either in half-high and low profile configurations are described, along with their respective internal configurations. As acknowledged by the Examiner, the AAPA does not teach the smaller than maximum allowable diameter discs, but instead attempts to remedy this deficiency by applying the Handbook. However, the Handbook merely provides a convenient table illustrating standard form factors of disc drives, along with their maximum allowable diameter disc sizes, along with their respective power dissipations. In fact, the Handbook contemplates only the use of the maximum allowable diameter discs in the drives, not the use of smaller than maximum allowable discs in the same standard form factors. Neither of the cited references, alone or in combination, contemplate the limitations of claim 1 or amended claim 30. Thus, there was no suggestion of all of the claim limitations as discussed above.

In order to make a case of prima facie case obviousness there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available in the art to modify the reference or to combine reference teachings. The Examiner alleges that "one of ordinary skill in the art would have been motivated to to have provided the diameter of the disc" of the AAPA, in light of the teachings of the Handbook by using an 84 mm disc "in order to reduce the power consumption as

compared to a larger diameter 95mm disc." There would have been no suggestion or motivation to one skilled in the art at the time of filing to modify the references to arrive at the current invention.

In fact, by reducing the size of the disc, the capacity of the drive would be decreased, thus providing a consequence directly opposed to the focus of the drive industry at the time. At the time of the filing of the application, the emphasis in the industry was to maximize the amount of storage available in each drive, and the Handbook thereby teaches away from reducing disc size in a drive of a given standard form factor. This misconstruction of the Handbook's teaching by the Office is completely contrary to the ordinary practices in the drive industry. That being the case, it can be seen that the Handbook would provide no motivation or suggestion to one of ordinary skill to modify or combine the reference teachings.

Based on the above arguments, the Examiner has not made out a case of prima facie obviousness. As such, the AAPA in view of the Handbook does not render the current invention obvious. Independent claims 1 and 30 are now believed to be allowable. Claims 2-4, 6-7, 11, 13, 18, 22 and 25 are also allowable to the extent that they depend from an allowable claim. Based on the above arguments, Applicant respectfully requests the reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a) and the subsequent allowance of claims 1, 2-4, 6-7, 11, 13, 18, 22, 25 and 30.

The Examiner has taken Official Notice that the 84 mm discs as claimed in dependent claim 6 are notoriously well known in the art. However, the Examiner has not provided a reference to support this assertion. As it is the case that at the time of filing an 84 mm disc was not and still is not the maximum allowable diameter disc to be used in 3 1/2 inch form factor, Applicant respectfully requests that the Examiner provide a sufficient citation to support this assertion.

The final component of the rejection under 35 U.S.C. 103 is that Applicant has not made a showing of the criticality of the 84 mm or any smaller than the maximum allowable diameter disc. The criticality has been demonstrated throughout the prosecution of the application as well as in the specification itself. Disc size reduction

per se confers benefits in terms of power consumption and drive performance. Moreover, as illustrated in Table I of the specification (see page 18, line 15 through page 19, line 21), the use of an 84 mm disc results in a 21-33% improvement in non-repeatable runout, which results in the reduction of tracking errors which increases the overall performance of the drive. As discussed above and in Paper No. 22 and in the Declaration of Rudy Thibodeau under 37 C.F.R. 1.132 as previously submitted by applicant, the use of the maximum allowable diameter disc for a 3 ½ inch disc drive did not allow for the disc stack to be spun at 10,000 rpm within the power and heat standards of the cabinets in which these drives were to be placed. All of these factors, either in combination or individually, provide a showing that an 84 mm disc provides specific advantages in terms of trade-off between storage capacity and drive performance.

Finally, the Examiner has rejected claims 11 and 18 as being obvious under the AAPA in light of Handbook because it would have been obvious to one skilled in the art to use six discs to increase the capacity of a drive or to reduce the height of the system. Due to the amendment of the claims, this rejection no longer applies.

As found in the discussion of the same claims in the section relating to a rejection under 35 U.S.C. §112, first paragraph, claim 11 has been amended to be dependent from claim 25. Claim 18 has been amended and, due to the scope of the amendment, is no longer related to this subject matter. Claim 11 has been amended to specifically claim a 3 ½ inch, low profile standard form factor drive with six discs which is greater than the number of discs used in the equivalent standard form factor using the maximum allowable diameter discs. The AAPA only discusses the state of the art at the time the application was filed. At the time, a standard low profile, 3 ½ inch drive used five discs. The same standard form factor drive embodying the invention now uses six discs. The Handbook makes no mention of the number of discs in a disc stack in any of the standard form factors. Rather, there is a discussion of increasing capacity by the division of the tracks on the disc itself. There is no motivation or suggestion to combine the two references to arrive at the present invention.

Reconsideration and withdrawal of the rejection of claims 11 and 18 under 35 U.S.C. §103(a) is respectfully requested. These claims are believed to be allowable as they are not obvious under the AIPA in light of the Handbook.

CONCLUSION

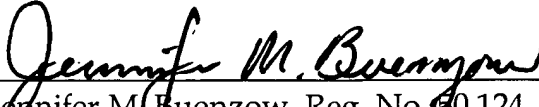
In conclusion, Applicant submits that the currently pending claims of the present invention are allowable as they have satisfied the statutory requirements of 35 U.S.C. §112, paragraphs 1, 2 and 6 and are not anticipated or obvious in light of the cited prior art. Thus, pending claims 1-4, 6-7, 11, 13, 18, 22, 25, 30 and 33-35 are believed to be allowable. It is respectfully requested that the outstanding rejections of the pending claims be reconsidered and withdrawn and that the application be allowed to pass to allowance.

Respectfully submitted,

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06 August 2002

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APPENDIX: MARKED UP CLAIMS

1. (Four Times Amended) A disc drive assembly including:

a single disc drive housing comprising a standard ~~configuration~~
form factor having a single spindle motor within the
housing; and

a disc drive supported in the housing having:

a stack of rotatable rigid recording discs mounted to a hub
where each disc has a diameter smaller than a maximum
allowable standard diameter of a rigid disc associated with
the standard form factor ~~configuration~~, the hub being
operatively configured for mounting on athe spindle motor,
whereby a design speed of a rotating stack of ~~due to the~~
smaller than maximum allowable diameter ~~of the discs is~~
substantially greater than a design speed of a rotating stack
of maximum allowable diameter discs, while maintaining
substantially similar power and operating temperature
requirements as a disc drive containing a reduced torque is
required to rotate a stack of maximum allowable smaller
diameter discs than is required to rotate a stack of standard
diameter discs, and;

~~an actuator assembly for reading data from and writing data~~
~~to a selected ones of the discs.~~

2. (Four Times Amended) The disc drive assembly of claim 1, wherein the single disc
drive housing is has a 3½ inch standard form factor~~configuration~~ and each of the
~~recording discs is a magnetic recording disc that has a diameter that is smaller than the~~
~~standard configuration of 95 mm.~~

3. (Five Times Amended) The A disc drive assembly including of claim 1, wherein
_____ a disc drive housing comprising a standard configuration;
_____ an an actuator assembly for reading data from and writing
data to a selected one of the rigid recording discs comprises comprising at least one
actuator arm with a transducer, the transducer being attached to a distal end of the
actuator arm, with each actuator arm assembly operating to position each transducer
adjacent a respective recording surface of a rotating rigid recording disc; and further
where an average seek time for a movement of the transducer by the actuator arm from a
current data track of the disc to a desired destination track on the disc is substantially less
for the rotating stack of smaller than the maximum allowable diameter discs than for a
rotating stack of maximum allowable diameter discs.

_____ means for rotating a stack of rigid recording discs within the
housing, each disc having at least one recording surface and
having a diameter smaller than the diameter of a rigid disc
associated with the standard configuration, where the means
requires less torque to rotate a stack of smaller diameter
discs than is required to rotate a stack of standard diameter
discs.

4. (Four Times Amended) The disc drive assembly of claim 13, wherein the disc drive
housing has a 3 1/2 inch configuration and each of the recording discs is a magnetic
recording disc that has a diameter that is at least 2.0 % smaller than the maximum
allowable diameter standard configuration of 95 mm.

5. _____ The disc drive assembly of claim 1, wherein each of the recording discs is
a magnetic recording disc and the stack of discs are mounted to a spindle motor for
operational rotation at 10,000 rpm.

6. (Amended) The disc drive assembly of claim 42, wherein each of the magnetic recording discs has a diameter of 84 mm.

7. (Thrice Amended) The disc drive assembly of claim 12, further comprising wherein ~~the stack of discs are mounted to a spindle motor for operational rotation at 10,000 rpm.~~

11. (Thrice Amended) The disc drive assembly of claim 252, wherein the single disc drive housing has a 3½ inch low-profile standard form factor configuration and the stack of smaller than maximum allowable diameter magnetic recording discs comprises six ~~magnetic recording~~ discs within the housing which is greater than a number of maximum allowable diameter discs in a 3 ½ inch low profile standard form factor of the standard configuration of discs.

~~12. The disc drive assembly of claim 11, wherein each of the magnetic recording discs has a diameter of 84 mm.~~

~~12.13. (Four Times Amended) — The disc drive assembly of claim 31, where the recording discs are magnetic recording discs.~~

~~14. — The disc drive assembly of claim 4, wherein each of the magnetic recording discs has a diameter of 84 mm.~~

18. (Thrice Amended) The disc drive assembly of claim 3-4, wherein the single disc drive housing has a standard 3½ inch low-profile form factor configuration and the number of magnetic recording discs in the housing is six which is greater than the number of discs of the standard configuration of five discs.

19. ~~_____ The disc drive assembly of claim 18, wherein each of the magnetic recording discs has a diameter of 84 mm.~~

20. (Four times Amended) The disc drive assembly of claim 7-18, wherein the means rotating includes a spindle motor supporting the stack plurality of discs are rotated for operational rotation at a design speed of 10,000 rpm.

21. ~~_____ The disc drive assembly of claim 1 further comprising the spindle motor.~~

22. (Amended) The disc drive assembly of claim 121 where a the-reduction in required torque correspondingly substantially reduces a run current required by the spindle motor to rotate a stack of smaller than the maximum allowable diameter standard discs than is required to rotate the stack of maximum allowable standard diameter discs.

23. ~~_____ The disc drive assembly of claim 21 where the spindle motor rotating the stack of smaller diameter discs has a reduced power dissipation over a spindle motor rotating a stack of standard diameter discs.~~

24. ~~_____ The disc drive assembly of claim 23 where the spindle motor rotating the stack of smaller diameter discs operates at a reduced temperature form a spindle motor rotating a stack of standard diameter discs.~~

25. (Amended) The disc drive assembly of claim 12 where a number of smaller than maximum allowable diameter discs in the stack is greater than a number of standard maximum allowable diameter discs in the stack contained in a single disc drive housing in the standard form factor configuration.

26. ~~The disc drive assembly of claim 3 where the reduction in required torque by the means for rotating correspondingly reduces a run current required by the spindle motor to rotate a stack of smaller than standard discs than is required to rotate the stack of standard diameter discs.~~

27. ~~The disc drive assembly of claim 13 where the means for rotating includes a hub operatively configured for mounting on a spindle motor.~~

28. ~~The disc drive assembly of claim 27 where the spindle motor operationally rotates at 10,000 rpm.~~

29. ~~The disc drive assembly of claim 28 where a number of smaller diameter discs in the stack rotated by the means is greater than a number of standard diameter discs in a stack contained in the standard disc drive housing configuration.~~

30.30. (Amended) A disc drive assembly comprising:

- a single disc drive housing comprising a ~~standard~~ 3 1/2 inch low profile standard -form factor and a single spindle motor~~configuration~~; and
- a disc drive supported in the housing having:

- an actuator assembly comprising at least one actuator arm with a transducer, the transducer being attached to a distal end of the actuator arm, with each actuator arm assembly operating to position each transducer adjacent a respective surface of a rotating rigid magnetic recording disc where the average seek time for a movement of the transducer from a current data track to a desired destination track on the recording disc is less than 7.7 msec;

- a stack of rigid magnetic recording discs having a smaller than ~~standard~~maximum allowable diameter of 84 mm, as

compared to a ~~standard~~maximum allowable diameter of 95mm, a number of the stack of smaller than ~~standard~~maximum allowable diameter discs being greater than a number of ~~standard~~maximum allowable diameter discs contained in the disc drive housing;

a hub upon which the stack of smaller than ~~standard~~maximum allowable diameter 84 mm discs is mounted, the hub being operatively configured for mounting to a ~~the~~ spindle motor which ~~operationally~~ rotates the stack of discs at a design speed of 10,000 rpm, where a torque required to rotate the smaller than ~~standard~~maximum allowable stack of discs is less than that required to rotate a stack of ~~standard~~maximum allowable diameter discs, ~~where the reduction in required torque correspondingly reduces a run current required by the spindle motor to rotate the stack of smaller than standard discs than is required to rotate the stack of standard diameter discs and where the design speed of a rotating stack of smaller than maximum allowable diameter discs is substantially greater than a design speed of a rotating stack of maximum allowable diameter discs while maintaining substantially similar power and operating temperature requirements as a disc drive containing a stack of maximum allowable diameter discs .~~

31. ~~The disc drive assembly of claim 28 where the spindle motor rotating the stack of smaller diameter discs has a reduced power dissipation over a spindle motor rotating a stack of standard diameter discs.~~

~~32. The disc drive assembly of claim 29 where the spindle motor rotating the stack of smaller diameter discs operates at a reduced temperature from a spindle motor rotating the stack of standard diameter discs.~~

33. (New) The disc drive assembly of claim 18, wherein the average track seek time is less than 7.7 msec.

34. (New) The disc drive assembly of claim 18 wherein the average track seek time is 5.7 msec.

35. (New) The disc drive assembly of claim 18 wherein the average track seek time is between 7.7 msec and 5.7 msec.

APPENDIX: MARKED UP PARAGRAPH

_____ Baffles 174, 176 and 178 are employed about the outer periphery of the discs to channel air movement and reduce drag on the discs. ~~Filter 180 may be employed to filter contaminants from the air.~~ An aperture 380 (FIGS. 7 and 8) is provided in a wall of housing 102 to permit the clock write head to access the servo track of the disc drive, and bottom aperture 382 (FIGS. 7 and 8) provides a seat for disc spindle 106 and its associated bearings; aperture 382 being sealed by a gasket and insertion of the disc spindle to the housing.